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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/681,216	10/09/2003	Yasuyuki Arai	740756-2652	8342
22204	7590	11/17/2004	EXAMINER	
NIXON PEABODY, LLP 401 9TH STREET, NW SUITE 900 WASHINGTON, DC 20004-2128			RICHARDS, N DREW	
			ART UNIT	PAPER NUMBER
			2815	

DATE MAILED: 11/17/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/681,216

Applicant(s)

ARAI ET AL.

Examiner

N. Drew Richards

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 09 October 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-33 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-33 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 October 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☒ Certified copies of the priority documents have been received in Application No. 10/155,971.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 10/9/03, 1/20/04
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Priority***

1. Applicant has not complied with one or more conditions for receiving the benefit of an earlier filing date under 35 U.S.C. 120 as follows:

An application in which the benefits of an earlier application are desired must contain a specific reference to the prior application(s) in the first sentence of the specification or in an application data sheet (37 CFR 1.78(a)(2) and (a)(5)). The specific reference to any prior nonprovisional application must include the relationship (i.e., continuation, divisional, or continuation-in-part) between the applications except when the reference is to a prior application of a CPA assigned the same application number.

### ***Information Disclosure Statement***

2. Applicant has submitted two Information Disclosure Statements (IDS's) in this application. The first IDS was submitted on 10/9/03 and the second IDS was submitted on 1/20/04. It is noted that the second IDS lists the same references as the first IDS. Thus, the references in the second IDS have been crossed through by the Examiner as they have already been considered and initialed on the first IDS.

### ***Drawings***

3. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, a device having both

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(a) the organic semiconductor film having a thickness thicker than that of the second insulated film (claims 3, 9, 15 and 21) and (b) a second and third electrode must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

4. The drawings are objected to because the reference numerals and text used in figure 1 are not consistent with those used in figures 2C, 2D and 2E and the specification. Figure 1 labels the "third electrode (source electrode)" as 106 while the specification and figures 2C use 106 as the organic semiconductor film and 108 as the source electrode. Figure 1 labels the "fourth electrode (drain electrode)" 107 while the specification and figure 2D use 107 as the channel region and 109 as the drain electrode. Figure 2E includes the labels "formation of first electrode and second electrode", "first electrode" 108, and "second electrode" 109. The first electrode has previously been formed in figure 2A. Figure 2E in fact shows the formation of the second and third electrode and the text labels should be corrected as such.

5. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate

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changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Specification***

6. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: the specification does not provide antecedent basis for a device having both (a) the organic semiconductor film having a thickness thicker than that of the second insulated film (claims 3, 9, 15 and 21) and (b) a second and third electrode.

### ***Claim Rejections - 35 USC § 112***

7. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

8. Claims 3, 9, 15 and 21 rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter

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which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claims 3, 9, 15 and 21 all recite the limitation that the organic semiconductor film has a thickness thicker than that of the second insulated film. This is not described in the specification as the specification describes and clearly shows in figure 1 for example, the organic semiconductor film and the second insulated film having the same thickness. The organic semiconductor film is originally formed thicker than the second insulated film (see figure 2C) but is etched back to the same thickness as the second insulated film (see figure 2d). However, the independent claims from which claims 3, 9, 15 and 21 depend all recite a second and third electrode. In the device disclosed and described in the specification, the second and third electrode are formed on the organic semiconductor film after the organic semiconductor film has been etched back to the same thickness as the second insulated film. Thus, the specification does not describe the organic semiconductor film being thicker than the second insulated film with a second and third electrode contacting the organic semiconductor film.

### ***Claim Rejections - 35 USC § 102***

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the

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applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

10. Claims 1, 2, 4-8, 10-14, 16-20 and 22-33 are rejected under 35 U.S.C. 102(e) as being anticipated by Ishihara et al. (U.S. Patent No. 6,300,988 B1).

Ishihara et al. disclose an organic semiconductor device using an organic thin film transistor in figures 1(A)-7(C) and on columns 1-12 of their specification.

Specifically, Ishihara et al. disclose in figure 1(A) and on column 5 lines 44-63:

a first electrode 102 formed in contact with an insulated surface (electrode 102 is shown on the surface of glass (insulated) substrate 101);

a first insulated film 103 formed in contact with the first electrode 102;

a second insulated film 106 formed in contact with the first insulated film 103, having an opening part at a position superimposed on the first electrode 102 (second insulated film 106 is shown with an opening in the central area of figure 1(A) that can be seen aligned over the first electrode 102);

an organic semiconductor film 107/108 formed in the opening part, and a second electrode 104 and third electrode 105 formed in contact with the organic semiconductor film 107 (portion 107 of organic film 107/108 is formed in the opening part with the second electrode 104 and third electrode 105 contacting the edges of organic film 107);

wherein the organic semiconductor film 107/108 and the second insulated film 106 form the same surface (portion 108 of organic semiconductor film 107/108 is formed directly on the second insulated film 106 and thus forms the same surface, that

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is the upper surface of insulated film 106 and the bottom surface of portion 108 share the same surface).

With regard to claim 2, Ishihara et al. do not explicitly disclose that the organic semiconductor film is made of a soluble organic semiconductor material. Nonetheless, this limitation is implicitly disclosed as Ishihara et al. teaches the use of various organic materials that are inherently soluble. Ishihara et al. do disclose on column 4 lines 24-29 a variety of organic materials that may be used including pentacene. Pentacene is soluble and thus Ishihara et al. disclose the use of a soluble organic semiconductor material.

With regard to claim 4, the second electrode 104 and third electrode 105 are made of the same metal having a large work function (column 6 lines 38-45 teach the second and third electrodes being formed on the same metal; the metal used in the same as in the instant invention and thus reads on "having a large work function").

With regard to claim 5, the second electrode 104 and third electrode 105 comprise a metal selected from the group consisting of gold, platinum, chromium, palladium, aluminum, indium, molybdenum and nickel (disclosed as chromium, molybdenum, and gold on column 6 lines 38-45).

With regard to claim 6, the organic semiconductor device is disclosed as being incorporated into one of the group claimed, specifically a display device (see figures 5 and 6).

With regard to claim 7, Ishihara et al. disclose in figure 1(A) and on column 5 lines 44-63:

a first electrode 102 formed in contact with an insulated surface (electrode 102 is shown on the surface of glass (insulated) substrate 101);

a first insulated film 103 formed in contact with the first electrode 102;

a second insulated film 106 formed in contact with the first insulated film 103, having an opening part at a position superimposed on the first electrode 102 (second insulated film 106 is shown with an opening in the central area of figure 1(A) that can be seen aligned over the first electrode 102);

an organic semiconductor film 107/108 formed in the opening part, and a second electrode 104 and third electrode 105 formed in contact with the organic semiconductor film 107 (portion 107 of organic film 107/108 is formed in the opening part with the second electrode 104 and third electrode 105 contacting the edges of organic film 107);

wherein the second electrode 104 and the third electrode 105 are formed without contact with each other.

With regard to claim 8, Ishihara et al. do not explicitly disclose that the organic semiconductor film is made of a soluble organic semiconductor material. Nonetheless, this limitation is implicitly disclosed as Ishihara et al. teaches the use of various organic materials that are inherently soluble. Ishihara et al. do disclose on column 4 lines 24-29 a variety of organic materials that may be used including pentacene. Pentacene is soluble and thus Ishihara et al. disclose the use of a soluble organic semiconductor material.

With regard to claim 10, the second electrode 104 and third electrode 105 are made of the same metal having a large work function (column 6 lines 38-45 teach the second and third electrodes being formed on the same metal; the metal used in the same as in the instant invention and thus reads on "having a large work function").

With regard to claim 11, the second electrode 104 and third electrode 105 comprise a metal selected from the group consisting of gold, platinum, chromium, palladium, aluminum, indium, molybdenum and nickel (disclosed as chromium, molybdenum, and gold on column 6 lines 38-45).

With regard to claim 12, the organic semiconductor device is disclosed as being incorporated into one of the group claimed, specifically a display device (see figures 5 and 6).

With regard to claim 13, Ishihara et al. disclose in figure 1(A) and on column 5 lines 44-63:

a first electrode 102 formed in contact with an insulated surface (electrode 102 is shown on the surface of glass (insulated) substrate 101);

a first insulated film 103 formed in contact with the first electrode 102;

a second insulated film 106 formed in contact with the first insulated film 103, having an opening part at a position superimposed on the first electrode 102 (second insulated film 106 is shown with an opening in the central area of figure 1(A) that can be seen aligned over the first electrode 102);

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an organic semiconductor film 107/108 formed in the opening part, and a second electrode 104 and third electrode 105 formed in contact with the organic semiconductor film 107 (portion 107 of organic film 107/108 is formed in the opening part with the second electrode 104 and third electrode 105 contacting the edges of organic film 107);

wherein the second insulated film has a tapered rim (second insulated film 106 in figure 1(A) is considered to have a "rim" that is seen on either side of opening, this rim tapers down away from the opening).

With regard to claim 14, Ishihara et al. do not explicitly disclose that the organic semiconductor film is made of a soluble organic semiconductor material. Nonetheless, this limitation is implicitly disclosed as Ishihara et al. teaches the use of various organic materials that are inherently soluble. Ishihara et al. do disclose on column 4 lines 24-29 a variety of organic materials that may be used including pentacene. Pentacene is soluble and thus Ishihara et al. disclose the use of a soluble organic semiconductor material.

With regard to claim 16, the second electrode 104 and third electrode 105 are made of the same metal having a large work function (column 6 lines 38-45 teach the second and third electrodes being formed on the same metal; the metal used in the same as in the instant invention and thus reads on "having a large work function").

With regard to claim 17, the second electrode 104 and third electrode 105 comprise a metal selected from the group consisting of gold, platinum, chromium, palladium, aluminum, indium, molybdenum and nickel (disclosed as chromium, molybdenum, and gold on column 6 lines 38-45).

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With regard to claim 18, the organic semiconductor device is disclosed as being incorporated into one of the group claimed, specifically a display device (see figures 5 and 6).

With regard to claim 19, Ishihara et al. disclose in figure 1(A) and on column 5 lines 44-63:

a first electrode 102 formed in contact with an insulated surface (electrode 102 is shown on the surface of glass (insulated) substrate 101);

a first insulated film 103 formed in contact with the first electrode 102;

a second insulated film 106 formed in contact with the first insulated film 103, having an opening part at a position superimposed on the first electrode 102 (second insulated film 106 is shown with an opening in the central area of figure 1(A) that can be seen aligned over the first electrode 102);

an organic semiconductor film 107/108 formed in the opening part, and a second electrode 104 and third electrode 105 formed in contact with the organic semiconductor film 107 (portion 107 of organic film 107/108 is formed in the opening part with the second electrode 104 and third electrode 105 contacting the edges of organic film 107);

wherein the organic semiconductor film 107/108 is formed in contact with the first insulated film 103 (portion 107 of the organic semiconductor film contacts first insulated film 103).

With regard to claim 20, Ishihara et al. do not explicitly disclose that the organic semiconductor film is made of a soluble organic semiconductor material. Nonetheless,

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this limitation is implicitly disclosed as Ishihara et al. teaches the use of various organic materials that are inherently soluble. Ishihara et al. do disclose on column 4 lines 24-29 a variety of organic materials that may be used including pentacene. Pentacene is soluble and thus Ishihara et al. disclose the use of a soluble organic semiconductor material.

With regard to claim 22, the second electrode 104 and third electrode 105 are made of the same metal having a large work function (column 6 lines 38-45 teach the second and third electrodes being formed on the same metal; the metal used in the same as in the instant invention and thus reads on "having a large work function").

With regard to claim 23, the second electrode 104 and third electrode 105 comprise a metal selected from the group consisting of gold, platinum, chromium, palladium, aluminum, indium, molybdenum and nickel (disclosed as chromium, molybdenum, and gold on column 6 lines 38-45).

With regard to claim 24, the organic semiconductor device is disclosed as being incorporated into one of the group claimed, specifically a display device (see figures 5 and 6).

With regard to claim 25, Ishihara et al. disclose in figure 1(A) and on column 5 lines 44-63:

a gate electrode 102 provided over a substrate 101;

a gate insulator comprising a first insulating film 103 and a second insulating film 106, the first insulating film 103 provided over the gate electrode 102, the second

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insulating film 106 provided over the first insulating film 103, the second insulating film 106 provided with an opening part at a position superimposed over the gate electrode 102;

a channel region provided over the gate electrode 102 with the gate insulator therebetween, the channel region provided in an organic semiconductor film 107/108 provided in the opening part;

a source electrode 104 and a drain electrode 105 provided in contact with the organic semiconductor film 107/108;

wherein the organic semiconductor film 107/108 and the second insulating film 106 form the same surface (portion 108 of organic semiconductor film 107/108 is formed directly on the second insulating film 106 and thus forms the same surface, that is the upper surface of insulating film 106 and the bottom surface of portion 108 share the same surface).

With regard to claim 26, the second electrode 104 and third electrode 105 comprise a metal selected from the group consisting of gold, platinum, chromium, palladium, aluminum, indium, molybdenum and nickel (disclosed as chromium, molybdenum, and gold on column 6 lines 38-45).

With regard to claim 27, the organic semiconductor device is disclosed as being incorporated into one of the group claimed, specifically a display device (see figures 5 and 6).

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With regard to claim 28, Ishihara et al. disclose in figure 1(A) and on column 5 lines 44-63:

a gate electrode 102 provided over a substrate 101;

a gate insulator comprising a first insulating film 103 and a second insulating film 106, the first insulating film 103 provided over the gate electrode 102, the second insulating film 106 provided over the first insulating film 103, the second insulating film 106 provided with an opening part at a position superimposed over the gate electrode 102;

a channel region provided over the gate electrode 102 with the gate insulator therebetween, the channel region provided in an organic semiconductor film 107/108 provided in the opening part;

a source electrode 104 and a drain electrode 105 provided in contact with the organic semiconductor film 107/108;

wherein the second insulated film has a tapered rim (second insulated film 106 in figure 1(A) is considered to have a "rim" that is seen on either side of opening, this rim tapers down away from the opening).

With regard to claim 29, the second electrode 104 and third electrode 105 comprise a metal selected from the group consisting of gold, platinum, chromium, palladium, aluminum, indium, molybdenum and nickel (disclosed as chromium, molybdenum, and gold on column 6 lines 38-45).

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With regard to claim 30, the organic semiconductor device is disclosed as being incorporated into one of the group claimed, specifically a display device (see figures 5 and 6).

With regard to claim 31, Ishihara et al. disclose in figure 1(A) and on column 5 lines 44-63:

a gate electrode 102 provided over a substrate 101;

a gate insulator comprising a first insulating film 103 and a second insulating film 106, the first insulating film 103 provided over the gate electrode 102, the second insulating film 106 provided over the first insulating film 103, the second insulating film 106 provided with an opening part at a position superimposed over the gate electrode 102;

a channel region provided over the gate electrode 102 with the gate insulator therebetween, the channel region provided in an organic semiconductor film 107/108 provided in the opening part;

a source electrode 104 and a drain electrode 105 provided in contact with the organic semiconductor film 107/108;

wherein the organic semiconductor film 107/108 is formed in contact with the first insulated film 103 (portion 107 of the organic semiconductor film contacts first insulated film 103).

With regard to claim 32, the second electrode 104 and third electrode 105 comprise a metal selected from the group consisting of gold, platinum, chromium,

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palladium, aluminum, indium, molybdenum and nickel (disclosed as chromium, molybdenum, and gold on column 6 lines 38-45).

With regard to claim 33, the organic semiconductor device is disclosed as being incorporated into one of the group claimed, specifically a display device (see figures 5 and 6).

### ***Conclusion***

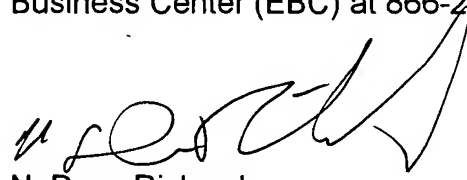
11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Dimitrakopoulos et al. (U.S. Patent No. 5,946,551).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to N. Drew Richards whose telephone number is (571) 272-1736. The examiner can normally be reached on Monday-Friday 9:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Thomas can be reached on (571) 272-1664. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read "N. Drew Richards", is written over the printed name.

N. Drew Richards  
AU 2815